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December 29, 1970

Mr. Uldis Karins, County Engineer
New Castle County Engineering Building
P. O. Box 165
Wilmington, Delaware 19899

Dear Mr. Karins:

Enclosed are a set of graphs and a table that depict the water quality parameters that have been measured at the Tybouts Corner Sanitary Landfill during the period of January through November 1970.

A definite deterioration of water quality has been observed in the samples obtained from wellpoints P2, P3, P7, and P11. The chloride concentration and specific conductance measurements for these sampling points are significantly higher than their corresponding background measurements taken during the early months of 1969. The level of both parameters is however, far below the levels that normally constitute pollution.

The high level of chloride and specific conductance at wellpoint P2 have persisted since early 1969. However, the increase in the level of these parameters for the other wells (P3, P7, and P11) has only occurred during the past six months. This recent increase undoubtedly reflects the advance of the fill over the area in which these wellpoints are located.

Wellpoint P1, located in the region of the initial fill operations, has sampled either "dry" or muddy over the past three months, thus precluding sampling from this point. The fluid level at this point will be monitored weekly and groundwater samples will be collected whenever the fluid level will permit.

A surprising result is that the samples obtained from wellpoint P5, located midway between P3 and P7, have not demonstrated the same rise in ion concentration as the samples from the neighboring wellpoints.

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Wellpoint P2 continues to exhibit a seasonal cycling of nitrate concentration that appears completely independent of the other wellpoints, but surprisingly similar to the seasonal nitrate nitrogen levels measured in Pigeon Run and Red Lion Creek. This nitrate cycling phenomenon was discussed in both the November 1970 and the August 1969 landfill water quality reports. Wellpoint P10 has been destroyed by bulldozing and has been unavailable for sampling.

No significant changes or trends are discernible from the other water quality parameters measured from wellpoint samplings:

Pond and stream samples have indicated a possible increase in the concentration of chloride ions. These measurements are suspect, however, due to the uniform nature of the increase at all sampling sites, both upstream and downstream from the landfill, and also because of the failure of the samples to demonstrate a corresponding increase in specific conductance.

The coliform count continues to remain high at all of the surface water sampling sites, both upstream and downstream from the landfill site. However, there is no measurable contribution of coliform from the landfill site to the areas surface drainage channels.

Aside from the nitrate and chloride changes discussed above, there have been no significant changes in the quality of the surface water samples. Thus, it does not appear that the landfill operations have had any measurable effect upon the water quality in either Pigeon Run or Red Lion Creek.

Tap water samples taken at the Webb house located southeast of the landfill operation give positive coliform counts during both November and December. These results were immediately reported to Mr. Gaynor of the New Castle County Health Unit of the State Board of Health.

Sincerely yours,

Gerald P. Rasmussen
Gerald P. Rasmussen
Lecturer

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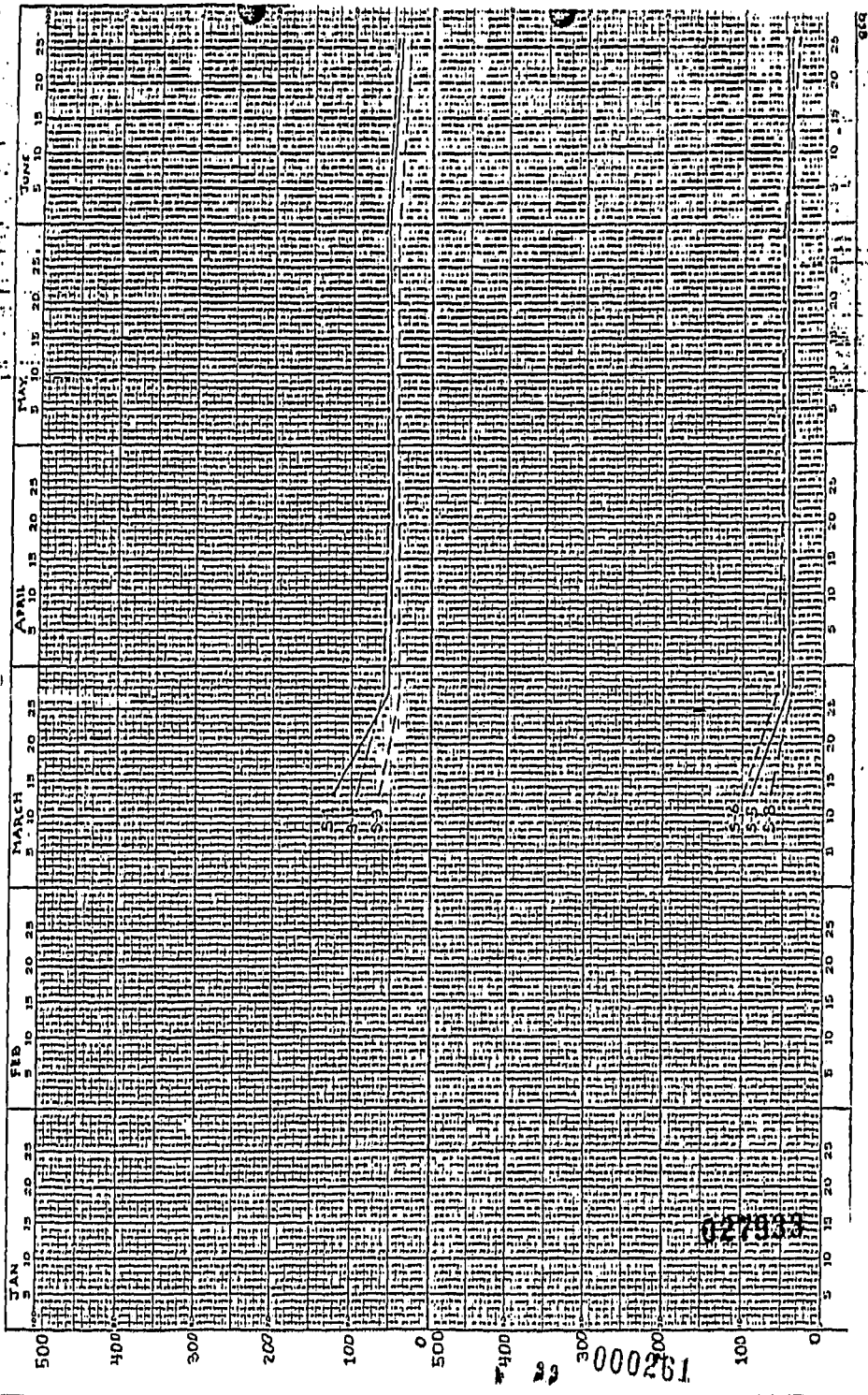
Enclosures

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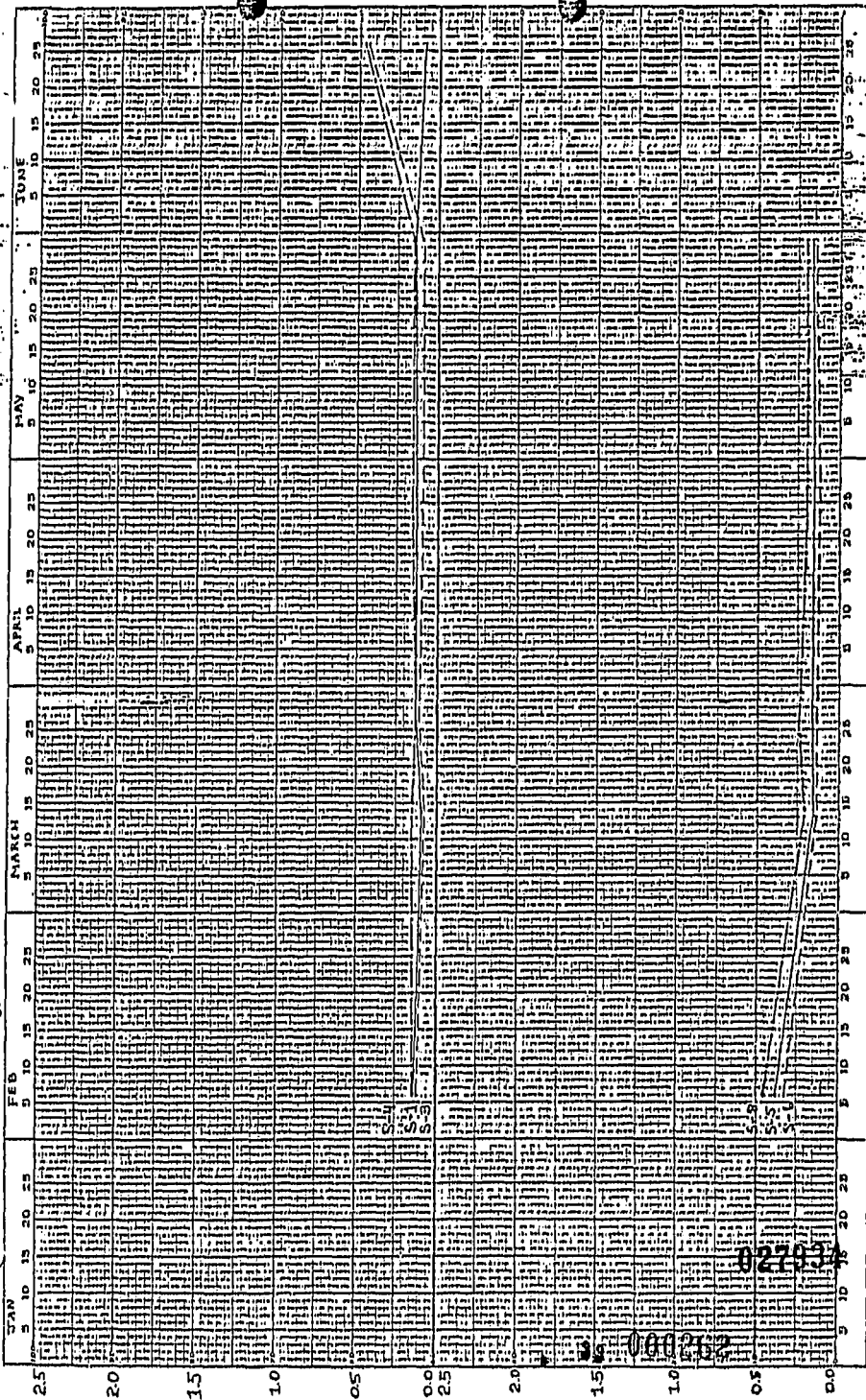
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HARDNESS

1976

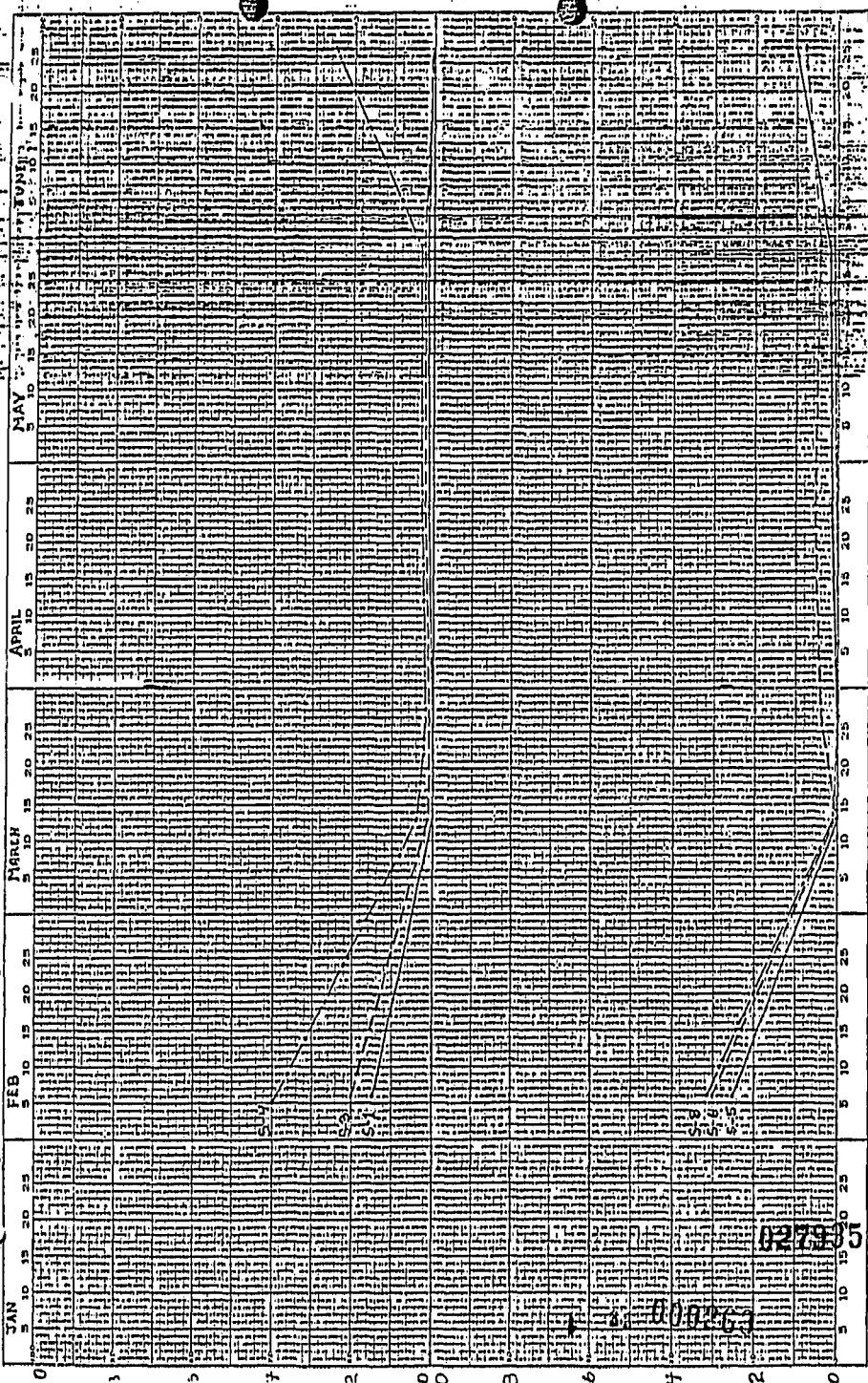


1970
IRON, m_3/l



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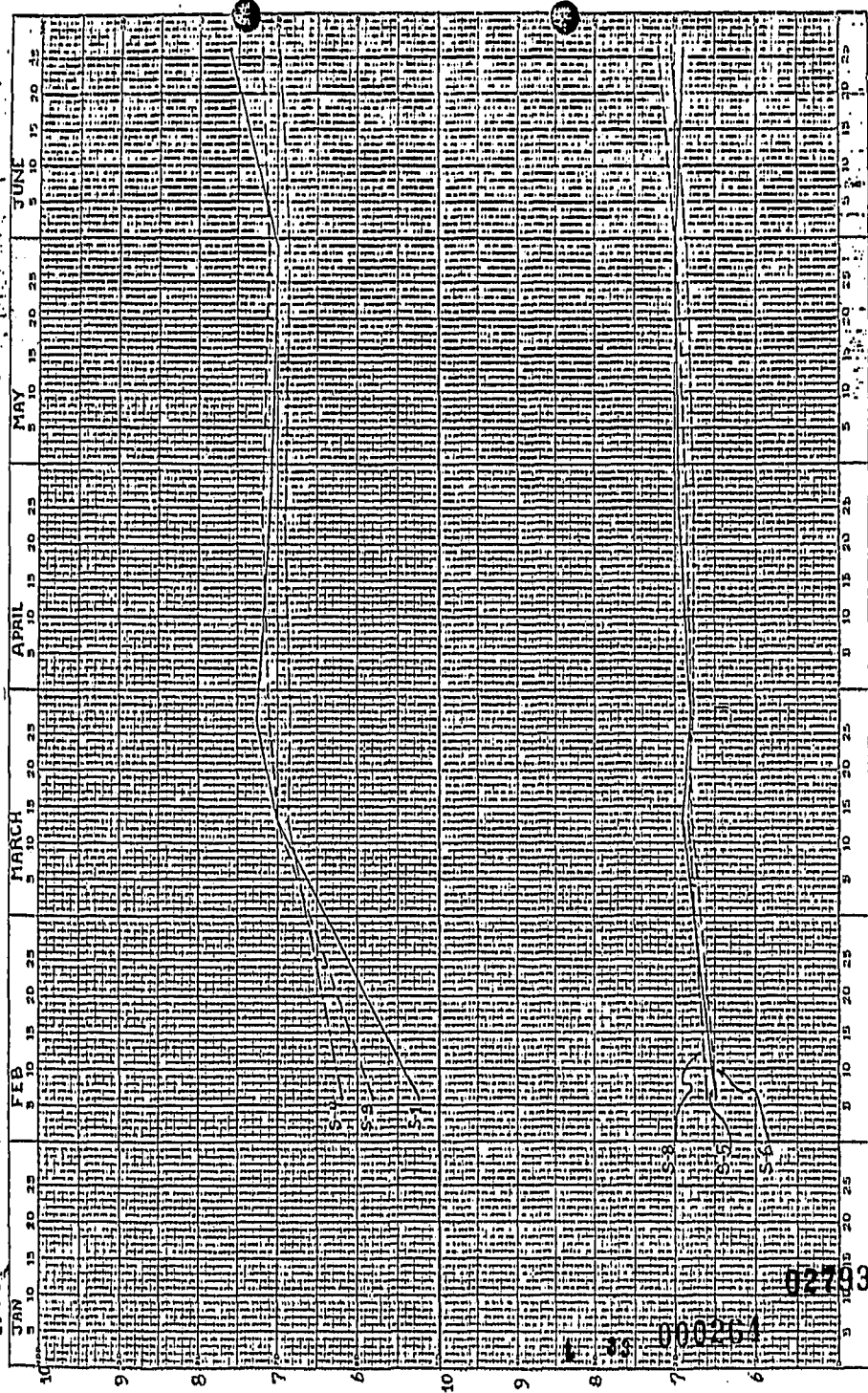
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1970 PH

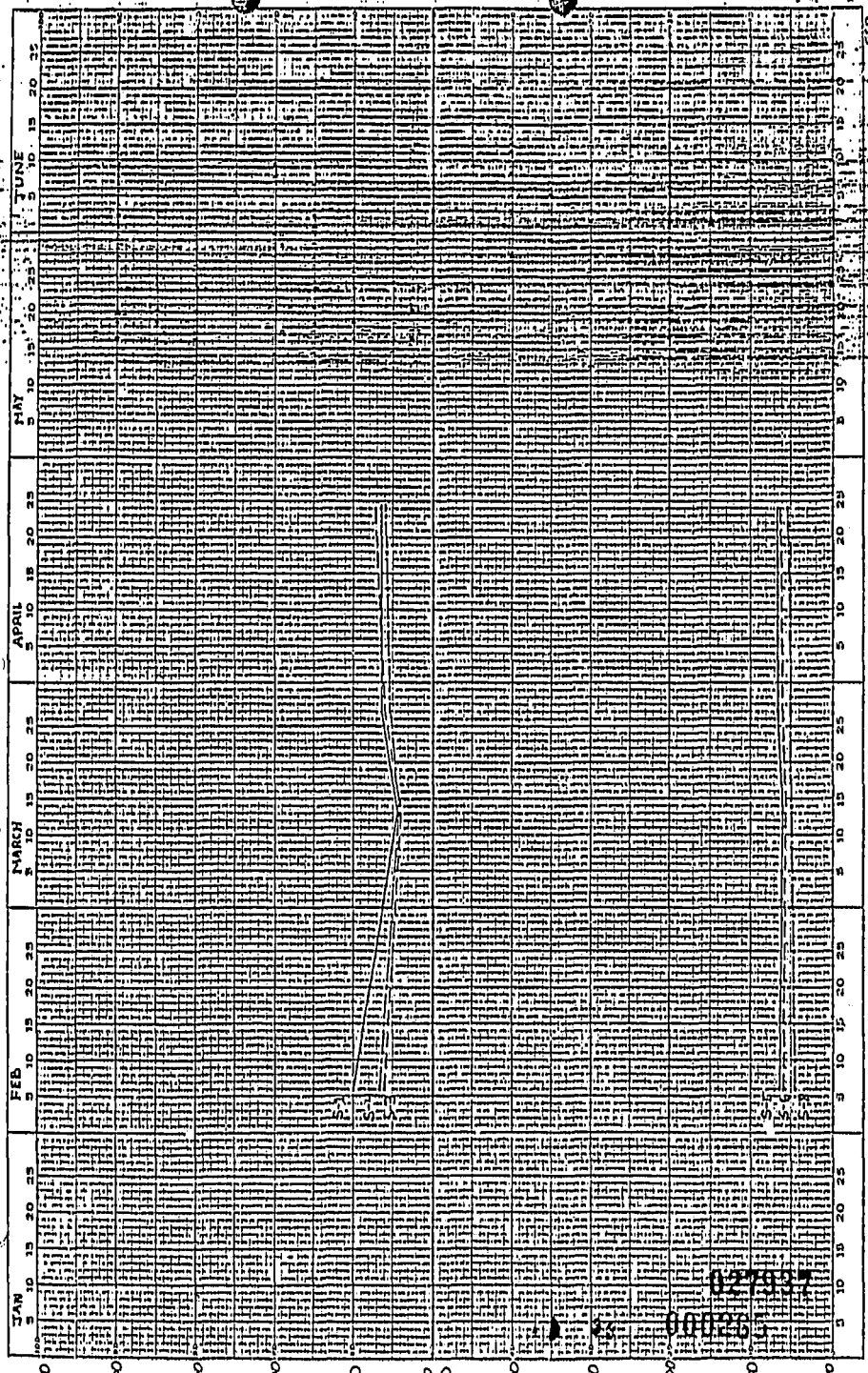


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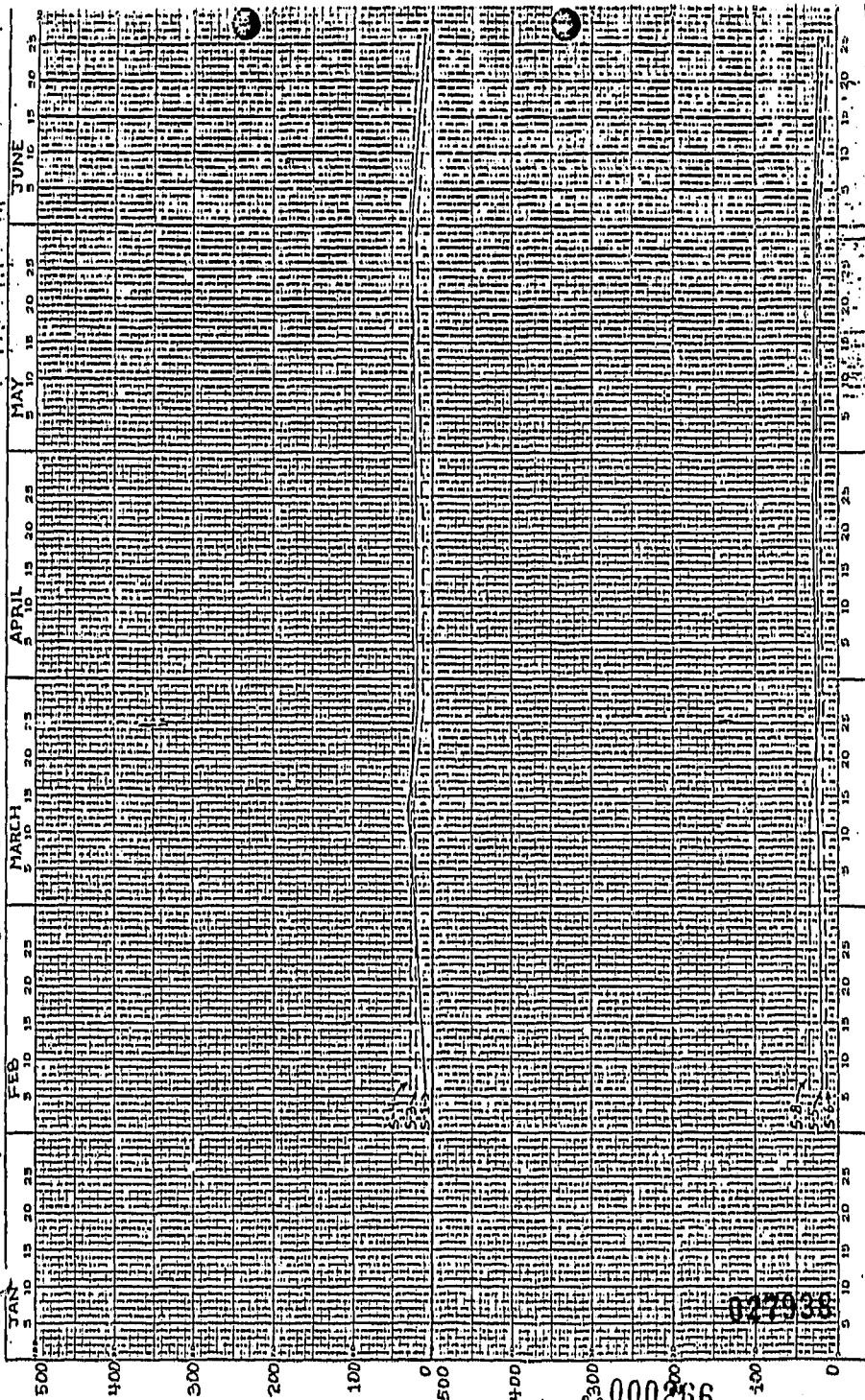
1970 SPECIFIC CONDUCTANCE, $\mu\text{mho/cm}$



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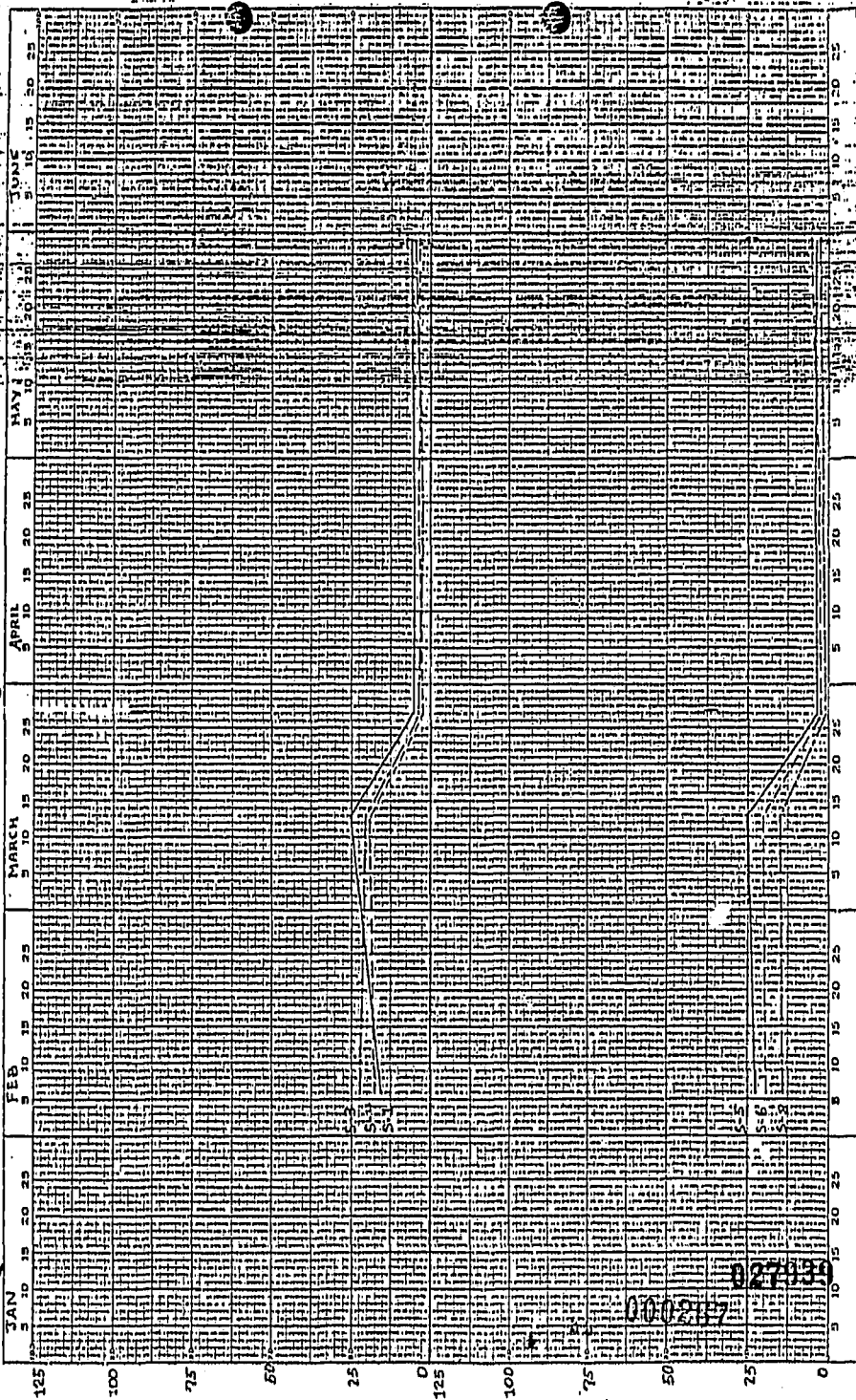
ALKALINITY, $\text{m}^3/\text{l CaCO}_3$



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1970 CHLORIDE, mg/l



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GGG

1970 IRON, mg/l

